

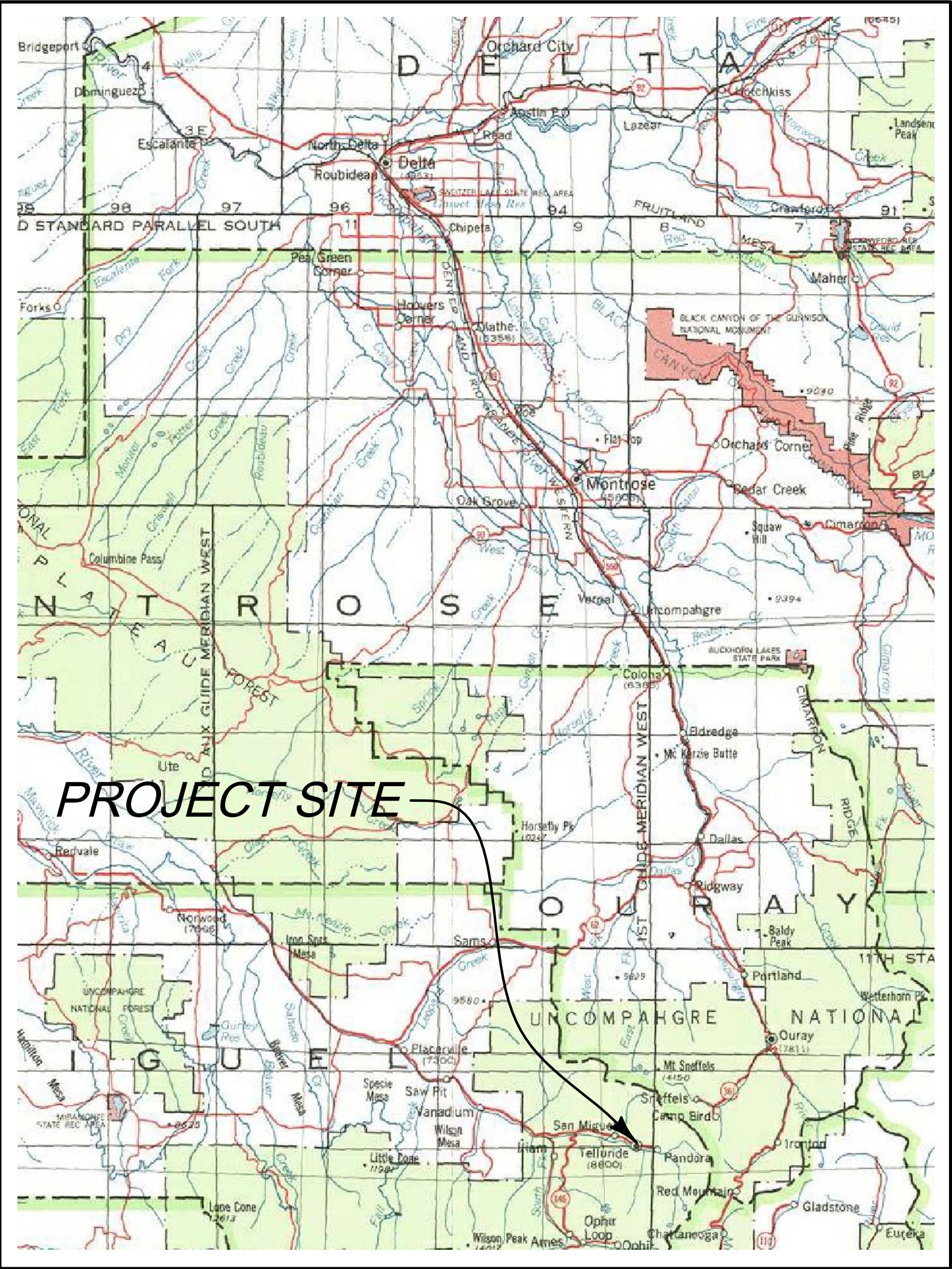


COLORADO AVENUE WATER MAIN REPLACEMENT PHASE 1

**TOWN OF TELLURIDE
SAN MIGUEL COUNTY, COLORADO
BUCKHORN GEOTECH PROJECT # 08-328
01 / 14 / 09**

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NOT TO SCALE

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222 South Park Avenue
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GENERAL NOTES

1. ALL CONSTRUCTION SHALL BE DONE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND APPLICABLE TOWN OF TELLURIDE, UTILITY COMPANIES, AND MANUFACTURER'S SPECIFICATIONS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS REQUIRED FOR THIS PROJECT PRIOR TO START OF CONSTRUCTION FROM THE APPLICABLE UTILITY COMPANIES AND ANY OTHER GOVERNING AGENCY AS REQUIRED. THE CONTRACTOR MUST COMPLY WITH THE PROVISIONS OF ALL PERMITS.
3. THE CONTRACTOR SHALL PROVIDE A CLEAR AND CONCISE RED LINE SET OF AS-CONSTRUCTED PLANS TO THE ENGINEER PRIOR TO FINAL ACCEPTANCE. PLANS SHALL SHOW THE AS-BUILT LOCATIONS AND DEPTH OF ALL UTILITIES, AND FITTINGS INSTALLED WHERE DIFFERENT FROM THE APPROVED PLANS.
4. PRE-CONSTRUCTION MEETING: A PRE-CONSTRUCTION MEETING MUST BE HELD BETWEEN THE CONTRACTOR, OWNER, AND ENGINEER PRIOR TO ANY CONSTRUCTION ACTIVITIES.
5. DEPTH OF BURY: ALL PIPE WITHIN THE TOWN OF TELLURIDE R.O.W. SHALL BE BURIED 84" TO THE TOP OF PIPE. IF FIELD CONDITIONS PREVENT FULL BURY DEPTH TO THE ABOVE PARAMETERS, THE CONTRACTOR SHALL IMMEDIATELY ADVISE THE ENGINEER. THE ENGINEER WILL ADVISE THE CONTRACTOR ON ACCEPTABLE BURY DEPTH FOLLOWING CONSULTATION WITH THE OWNER.
6. POLY ENCASEMENT: ALL FITTINGS, VALVES, FLEXIBLE COUPLINGS, AND REPAIR CLAMPS SHALL BE ENCASED WITH A 10 MIL POLYETHYLENE IN ACCORDANCE WITH AWWA C-105 METHOD C.
7. JOINT RESTRAINT & THRUST BLOCKS: ALL FITTINGS AND ASSOCIATED PIPE LENGTH SHALL BE RESTRAINED PER THESE PLANS. IN ADDITION TO THE RESTRAINED JOINTS, ALL PLUGS, TEES, VALVES, AND 90° BENDS SHALL HAVE CONCRETE THRUST BLOCKS PER THESE PLANS.
8. DOWNTOWN WORK RESTRICTIONS: PHASE 1 CONSTRUCTION TO BE COMPLETED FROM APRIL 2009 TO JUNE 1ST 2009. IN AN EFFORT TO MINIMIZE THE DISTURBANCE TO DOWNTOWN BUSINESSES DURING THE LATE SPRING TOURIST SEASONS, NO WORK WILL BE ALLOWED ON SUNDAY; ACCESS TO ALL BUSINESSES WILL BE MAINTAINED AT ALL TIMES; CONSTRUCTION WILL BE ALLOWED ON ONE (1) TOWN BLOCK AT A TIME WITH THAT BLOCK CLOSED TO VEHICULAR TRAFFIC; PROJECT WORK WILL PROGRESS FROM WEST TO EAST.
9. WATER SERVICE MAINTENANCE: THE CONTRACTOR SHALL MAINTAIN WATER SERVICE AT ALL TIMES AND SHALL MINIMIZE WATER SERVICE INTERRUPTION TO EXISTING WATER SERVICES DURING ALL CONSTRUCTION ACTIVITIES WITHIN THE PROJECT AREA. THE CONTRACTOR SHALL SUPPORT ALL SERVICE LINES FOUND IN CONFLICT WITH NEW WATER MAIN ALIGNMENTS WHETHER OR NOT SHOWN ON PLANS. EXISTING WATER METERS SHALL REMAIN IN PLACE AND ARE NOT TO BE DISTURBED AND/OR RELOCATED BY THE CONTRACTOR DURING WATER MAIN TRENCHING AND INSTALLATION OPERATIONS AND SHALL REMAIN ACCESSIBLE FOR READING OR MAINTENANCE DURING CONSTRUCTION.
10. SERVICE RECONNECTIONS: WHERE EXISTING WATER SERVICES ARE TO BE RELOCATED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR RELOCATING THOSE SERVICES TO THE NEW LOCATIONS AS SHOWN ON THE APPROVED PLANS. RELOCATION WORK SHALL INCLUDE, BUT NOT BE LIMITED TO, NEW SERVICES SADDLES AND TAPS, NEW SERVICE PIPE, ANGLE METER STOPS, BALL VALVES, TRACER WIRE, DETECTOR TAPE, SETTING NEW METERS, (PROVIDED BY THE CONTRACTOR) AND METER BOXES, ALL WORK NECESSARY TO RECONNECT THE PRIVATE PLUMBING. ANY AND ALL WORK MUST BE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS. THE CONTRACTOR SHALL SALVAGE ALL EXISTING METERS AND BOXES. ALL SERVICES ARE TO BE TAPPED ON THE SIDE OF THE MAIN FACING THE PROPERTY THAT THE METER SERVES.
11. CUSTOMER NOTIFICATION: CONNECTIONS OR TIE-INS TO THE EXISTING TELLURIDE WATER SYSTEM WILL NOT BE PERMITTED ON ANY WEEKDAY PRIOR TO 9 A.M. OR AFTER 11:30 A.M. OR ON ANY SATURDAY OR SUNDAY UNLESS PRIOR APPROVAL HAS BEEN OBTAINED IN WRITING FROM THE OWNER'S REPRESENTATIVE.

IF NEW CONSTRUCTION REQUIRES THE WATER TO BE SHUT OFF TO MAKE CONNECTIONS OR TIE-INS TO THE EXISTING SYSTEM, THE CONTRACTOR SHALL PROVIDE ENGINEER AND OWNER A WRITTEN SCHEDULE OF THE PROPOSED TIE-INS OR CONNECTIONS AT LEAST 48 HOURS PRIOR TO THE START OF SUCH WORK. HOWEVER, NO WATER SHALL BE TURNED OFF UNTIL ALL AFFECTED WATER USERS HAVE BEEN NOTIFIED IN WRITING BY THE CONTRACTOR OF THE SCHEDULE. THE NOTIFICATION BY INFORMATION CARD SHALL BE MADE NO LESS THAN 24 HOURS BEFORE WATER IS TO BE TURNED OFF. ALL SYSTEM "SHUT DOWNS" MUST BE COORDINATED WITH THE ENGINEER AND OWNER. INFORMATION CARDS WILL BE DEVELOPED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER AND OWNER. THE INFORMATION CARD SHOULD PROVIDE A PHONE NUMBER AT WHICH THE CONTRACTOR CAN BE REACHED 24 HOURS A DAY FOR WATER USER QUESTIONS AND INQUIRIES. SHUT OFF SHALL NOT BE MADE TO ANY LINES SERVING CUSTOMERS DEPENDENT ON WATER SERVICES DURING OPERATING HOURS UNLESS OTHER ARRANGEMENTS HAVE BEEN APPROVED BY THE ENGINEER. WORK INVOLVING THESE CUSTOMERS MAY BE REQUIRED AT NIGHT OR ON WEEKENDS AND MAY REQUIRE INSTALLATION OF TEMPORARY WATER SERVICE LINES AND SERVICE CONNECTIONS.

IN THE EVENT OF DAMAGE TO AN EXISTING WATER MAIN, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY TELLURIDE PUBLIC WORKS. TELLURIDE WATER PERSONNEL WILL CLOSE ALL VALVES NECESSARY TO AFFECT REPAIRS. EMERGENCY REPAIRS MADE BY THE CONTRACTOR SHALL BE PERFORMED UNDER THE SUPERVISION OF TELLURIDE PUBLIC WORKS. IF THE CONTRACTOR FAILS TO ACCOMPLISH REPAIRS WITHIN A REASONABLE TIME PERIOD, TELLURIDE PUBLIC WORKS PERSONNEL WILL DO THE WORK AND THE CONTRACTOR SHALL BE CHARGED FOR ALL COSTS INCURRED.

12. EXISTING UTILITIES: UTILITY LOCATIONS ARE SHOWN ON THE PLANS FOR DESIGN PURPOSES ONLY. IN GENERAL, THE LOCATIONS OF EXISTING MAJOR UTILITIES, ABOVE GROUND AND UNDER GROUND, ARE INDICATED ON THE DRAWING FOR DRAFTING PURPOSES ONLY.

THIS INFORMATION HAS BEEN OBTAINED FROM UTILITY MAPS, FIELD SURVEY WORK AND FROM DESCRIPTIONS PROVIDED BY THE VARIOUS AGENCIES INVOLVED AND REPRESENTS THE BEST INFORMATION AVAILABLE. ENGINEER AND OWNER DO NOT GUARANTEE THE ACCURACY OR COMPLETENESS OF THIS INFORMATION AND IT IS TO BE UNDERSTOOD THAT OTHER FACILITIES NOT SHOWN ON THE DRAWINGS MAY BE ENCOUNTERED DURING THE COURSE OF THE WORK. UNDER STATE LAW THE CONTRACTOR SHALL CONTACT ALL UTILITIES IN ORDER TO DETERMINE THE LOCATION OF THEIR RESPECTIVE UTILITIES PRIOR TO ANY EXCAVATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGES TO EXISTING UTILITIES AND SHALL BE RESPONSIBLE FOR ANY NECESSARY REPAIRS AT HIS OWN EXPENSE.

IF THE PIPELINE PARALLELS A SEWER LINE, THERE SHALL BE A MINIMUM OF 10' SEPARATION. THE SEWER LINE SHALL BE ENCASED WHEN MINIMUM REQUIREMENTS ARE NOT MET.

THE CONTRACTOR SHALL BE REQUIRED TO CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO (DIAL 811) TWO WORKING DAYS PRIOR TO ANY EXCAVATION TO DETERMINE ACCURATE UTILITY LOCATIONS. THE CONTRACTOR SHALL KEEP ALL UTILITY NOTIFICATION REQUESTS UP TO DATE AND COMPLY WITH APPLICABLE COLORADO STATUTES PERTAINING TO THE UTILITY NOTIFICATION CENTER OF COLORADO.

13. OBSTRUCTIONS: ANY OBSTRUCTIONS, INCLUDING, BUT NOT LIMITED TO, STAKES SET BY ENGINEERS, MAIL BOXES, GRAVEL, ROCKS, TREES, SHRUBBERY, LAWN, LANDSCAPED OR OPEN AREAS, FENCES, EMBANKMENTS, CURBS, GUTTERS, UNPAVED STREETS, ALLEYS, DRIVEWAYS, SIDEWALKS, DRAIN SPOUTS, PIPE LINES, SPRINKLER SYSTEMS, STORM DRAINS, SEWERS, HOUSE CONNECTION SEWER, CONDUIT, UTILITY POLES, TRAFFIC SIGNS OR CONTROLS, ETC., SHALL BE SUPPORTED OR PROTECTED FROM INJURY BY THE CONTRACTOR DURING CONSTRUCTION AND UNTIL COMPLETION OF THE WORK. IN THE CASE OF SHRUBBERY AND LAWNS WHICH ARE REMOVED OR DAMAGED, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPLACE THEM, USING ACCEPTABLE NURSERY METHODS. IN ANY EVENT, HOWEVER, THE CONTRACTOR IS LIABLE AND RESPONSIBLE FOR THE REPAIR AND REPLACEMENT OF ANY DAMAGED OBSTRUCTIONS WITH DUPLICATING MATERIALS AND GOODS IN AS GOOD OR BETTER THAN THE ORIGINAL CONDITION, AS DETERMINED BY THE ENGINEER.

14. INSPECTION: INSPECTORS EMPLOYED BY THE ENGINEER OR OWNER REPRESENTATIVE SHALL BE AUTHORIZED TO INSPECT ALL WORK DONE AND MATERIALS FURNISHED. SUCH INSPECTION MAY EXTEND TO ALL OR ANY PART OF THE WORK AND TO THE PREPARATION, FABRICATION, OR MANUFACTURE OF THE MATERIALS TO BE USED. THE INSPECTOR SHALL NOT BE AUTHORIZED TO ALTER OR WAIVE THE PROVISIONS OF THE CONTRACT. THE INSPECTOR SHALL BE AUTHORIZED TO ISSUE INSTRUCTIONS IN KEEPING WITH THE DESIGN INTENT OF THE PLANS AND SPECIFICATIONS. THE INSPECTOR SHALL NOT ACT AS FOREMAN FOR THE CONTRACTOR; HOWEVER, THE INSPECTOR SHALL HAVE THE AUTHORITY TO REJECT DEFECTIVE MATERIALS OR WORK. THE INSPECTOR ENGINEER SHALL BE THE SOLE INTERPRETER OF THE SPECIFICATIONS AND PLANS.

ITEMS OF WORK REQUIRING INSPECTION PRIOR TO BEING BACKFILLED OR OTHERWISE CONCEALED BY THE CONTRACTOR, INCLUDE, BUT ARE NOT LIMITED TO, TRENCH DEPTH AND LOCATION, PIPE MATERIALS AND INSTALLATION, PIPE FITTINGS AND INSTALLATION, THRUST RESTRAINTS, FIRE HYDRANT INSTALLATION, TEMPORARY PLUGS, TAPS AND TIE-INS, SERVICES, DRAIN ASSEMBLY, BEDDING, AND DETECTABLE AND MARKING TAPE INSTALLATION.

ANY WORK DONE OR MATERIALS USED WITHOUT INSPECTION BY THE ENGINEER OR OWNER REPRESENTATIVE MAY BE ORDERED UNCOVERED AND REMOVED OR REPLACED AT THE CONTRACTOR'S EXPENSE EVEN IF THE UNCOVERED WORK IS DETERMINED TO BE ACCEPTABLE.

15. TRAFFIC CONTROL: THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TWO-WAY TRAFFIC ON ALL STREETS OTHER THAN THE TOWN BLOCK THAT IS UNDER CONSTRUCTION.

ABBREVIATIONS

| | |
|---------------|---------------------------------------|
| APPROX. ASSY. | APPROXIMATE ASSEMBLY |
| CDOT | COLORADO DEPARTMENT OF TRANSPORTATION |
| ELEV. | ELEVATION |
| E.O.P. | EDGE OF PAVEMENT |
| FL | FLOWLINE |
| GALV. | GALVANIZED |
| HBP | HOT BITUMINOUS PAVEMENT |
| LT | LEFT |
| ML | MATCH LINE |
| O.D. | OUTSIDE DIAMETER |
| R.O.W. | RIGHT OF WAY |
| RT | RIGHT |
| STA | STATION |

CONTOUR INTERVAL = 1 FOOT

| ALIGNMENT LINE TABLE | | | | |
|----------------------|---------|---------------|-----------|----------|
| LINE # | LENGTH | DIRECTION | BEGIN STA | END STA |
| L1 | 452.05 | N17° 51' 57"E | 0+00.00 | 4+52.05 |
| L2 | 2650.27 | S72° 06' 00"E | 4+52.05 | 31+02.32 |

LEGEND

| DESCRIPTION | NEW | EXISTING |
|-----------------------------------|------|----------|
| WATER LINE | —W— | —W— |
| ELECTRIC LINE (UNDERGROUND) | | —E— |
| TELEPHONE LINE (UNDERGROUND) | | —T— |
| GAS LINE | | —G— |
| SANITARY SEWER LINE | —SS— | —SS— |
| EXISTING CONTOURS | | --- |
| WATER GATE VALVE | | |
| WATER METER | | |
| WATER LINE TEE AND CROSS | | |
| WATER LINE BENDS | | |
| STEEL OR CONCRETE CASING FOR PIPE | | |
| AIR RELIEF VALVE AND VAULT | | |
| FIRE HYDRANT | | |
| PARKING VENDOR | | |
| POST / SIGN | | |
| SEWER MANHOLE | | |
| LIGHT POLE | | |
| LAMP BOX | | |
| PHONE BOX | | |
| MAILBOX | | |
| BUILDING | | |
| TREELINE | | |
| TREE | | |
| CONTROL POINT | | |
| THRUST BLOCK | | |
| RESTRAINED JOINT * | | |

* RESTRAINED JOINTS — ALL FITTINGS AND ASSOCIATED PIPE LENGTH SHALL BE RESTRAINED PER DETAIL, SHEET D-2



PROJECT BOUNDARY
PHASE 1

ESTIMATED PROJECT QUANTITIES

| ITEM NO. | DESCRIPTION | UNIT | QUANTITY |
|------------------------------|---|------|----------|
| WATER LINES | | | |
| 1 | 1" COPPER SERVICE LINE (BEYOND 10' FOR EACH SERVICE) | LF | 805 |
| 2 | 4" D.I.P. WATER LINES | LF | 86 |
| 3 | 6" D.I.P. WATER LINES | LF | 31 |
| 4 | 8" D.I.P. WATER LINES | LF | 80 |
| 5 | 10" D.I.P. WATER LINES | LF | 1527 |
| 6 | 8" OR 10" D.I.P. TEE OR CROSS (INCL. FITTING, RESTRAINT & THRUST) | EA | 19 |
| 7 | PIPE ENCASEMENT | LF | 80 |
| WATER VALVES AND ACCESSORIES | | | |
| 8 | 10" GATE VALVES (INCL. VALVE, BOX, RESTRAINT & THRUST) | EA | 6 |
| 9 | 8" GATE VALVES (INCL. VALVE, BOX, RESTRAINT & THRUST) | EA | 6 |
| 10 | 6" GATE VALVES (INCL. VALVE, BOX, RESTRAINT & THRUST) | EA | 1 |
| 11 | 4" GATE VALVES (INCL. VALVE, BOX, RESTRAINT & THRUST) | EA | 9 |
| 12 | 2" AIR RELIEF VALVE & VAULT | EA | 1 |
| WATER SERVICE RECONNECTIONS | | | |
| 13 | SERVICE RECONNECTION TYPE A (EST. 25%) | EA | 12 |
| 14 | SERVICE RECONNECTION TYPE B (EST. 25%) | EA | 13 |
| 15 | SERVICE RECONNECTION TYPE C (EST. 50%) | EA | 24 |
| 16 | EXISTING FIRE HYDRANT RECONNECTION | EA | 6 |
| SEWER LINES | | | |
| 17 | 4" PVC SEWER SERVICE LINE REPLACEMENT | LF | 65 |
| 18 | 8" PVC SEWER LINE REPLACEMENT | LF | 200 |
| MISCELLANEOUS | | | |
| 19 | MILLING / ASPHALT PAVEMENT REMOVAL | SY | 1974 |
| 20 | HOT BITUMINOUS PAVING | TON | 424 |
| 21 | CONCRETE FLATWORK REPLACEMENT (SIDEWALK, V-PANS) | SF | 474 |
| 22 | CONCRETE CURB AND GUTTER REPLACEMENT | LF | 51 |
| 23 | REMOVAL & DISPOSAL OF UNSUITABLE SOILS (TAILINGS) | CY | 92 |
| 24 | PROCESSING NATIVE TRENCH SOILS (2" AND 4" MINUS) | CY | 3171 |
| 25 | REMOVAL AND DISPOSAL OF TRENCH SPOILS (ROCK OVER 4") | CY | 973 |
| 26 | CLASS 6 ROAD BASE (TOP 2' OF BACKFILL ON ALL MAIN TRENCHES) | CY | 605 |
| 27 | FLOWFILL (TOP 2' OF BACKFILL ON ALL SERVICE LINE TRENCHES) | CY | 362 |
| 28 | TRAFFIC CONTROL | LS | 1 |
| 29 | STORMWATER MANAGEMENT | LS | 1 |
| 30 | MOBILIZATION / DEMOBILIZATION | LS | 1 |

① EACH SERVICE RECONNECTION INCLUDES 10 FEET OF 1" COPPER SERVICE LINE

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TOWN OF TELLURIDE
COLORADO AVENUE WATER MAIN REPLACEMENT – PHASE 1
GENERAL NOTES, LEGEND AND QUANTITIES

| REVISIONS | DATE |
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DESIGNED ELK, P.E.

DRAWN PJJ/BMB

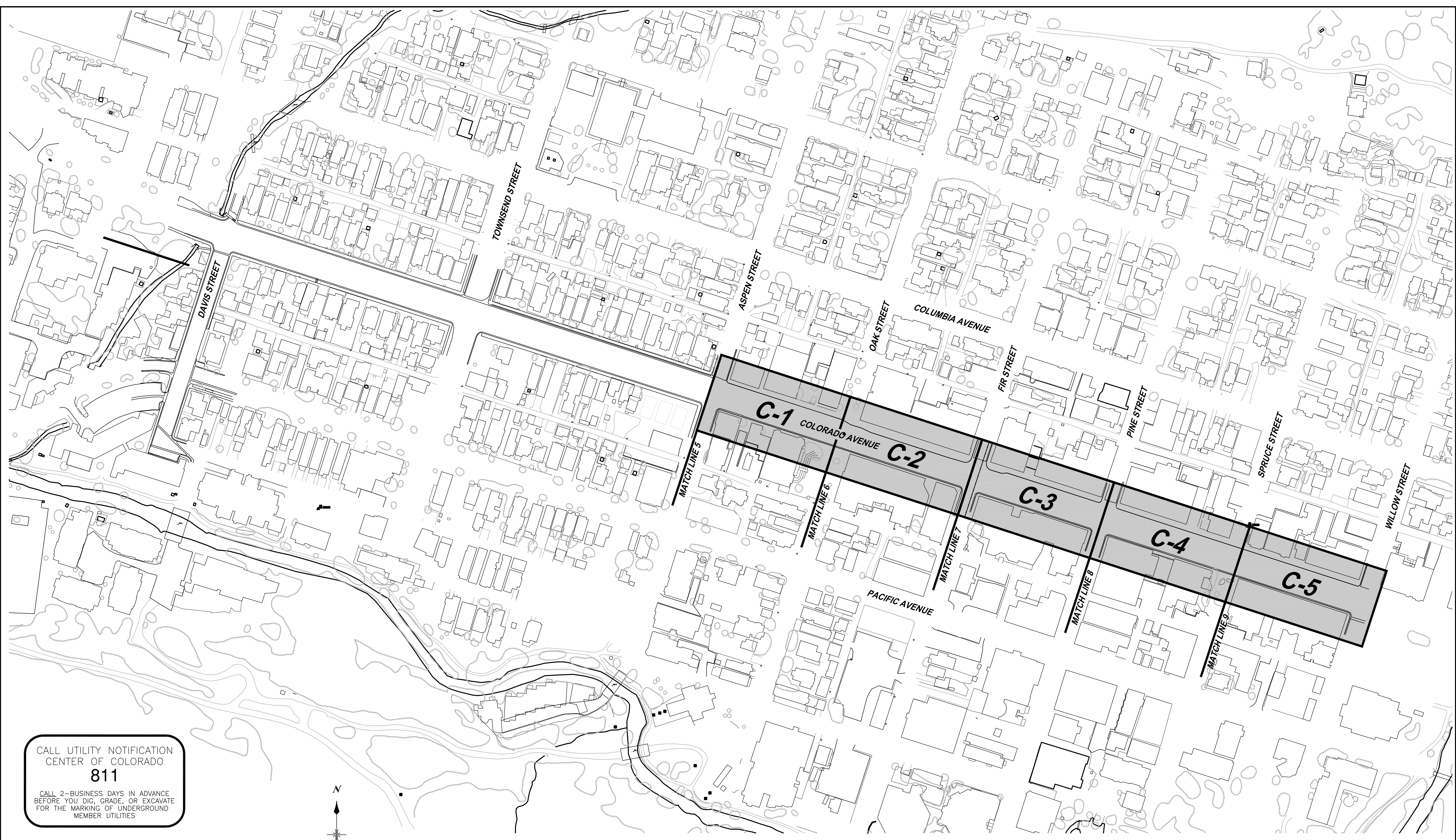
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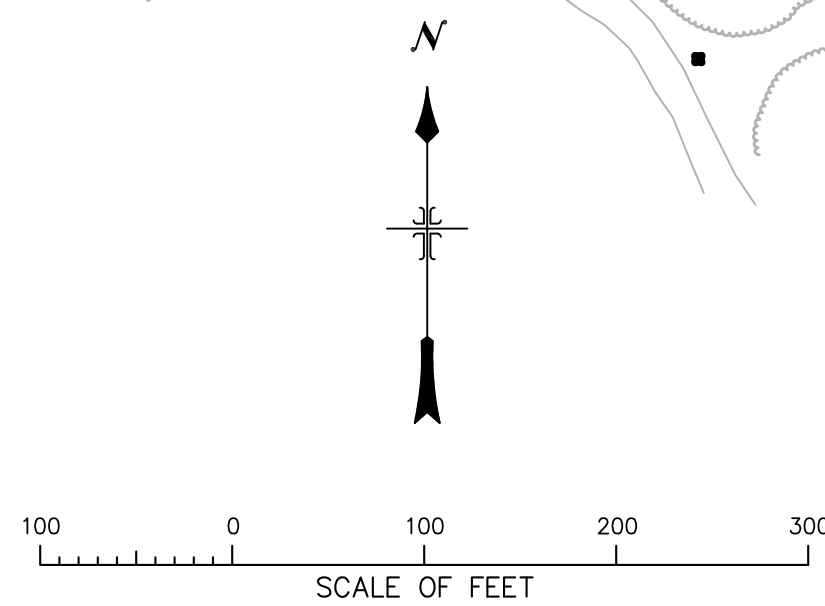
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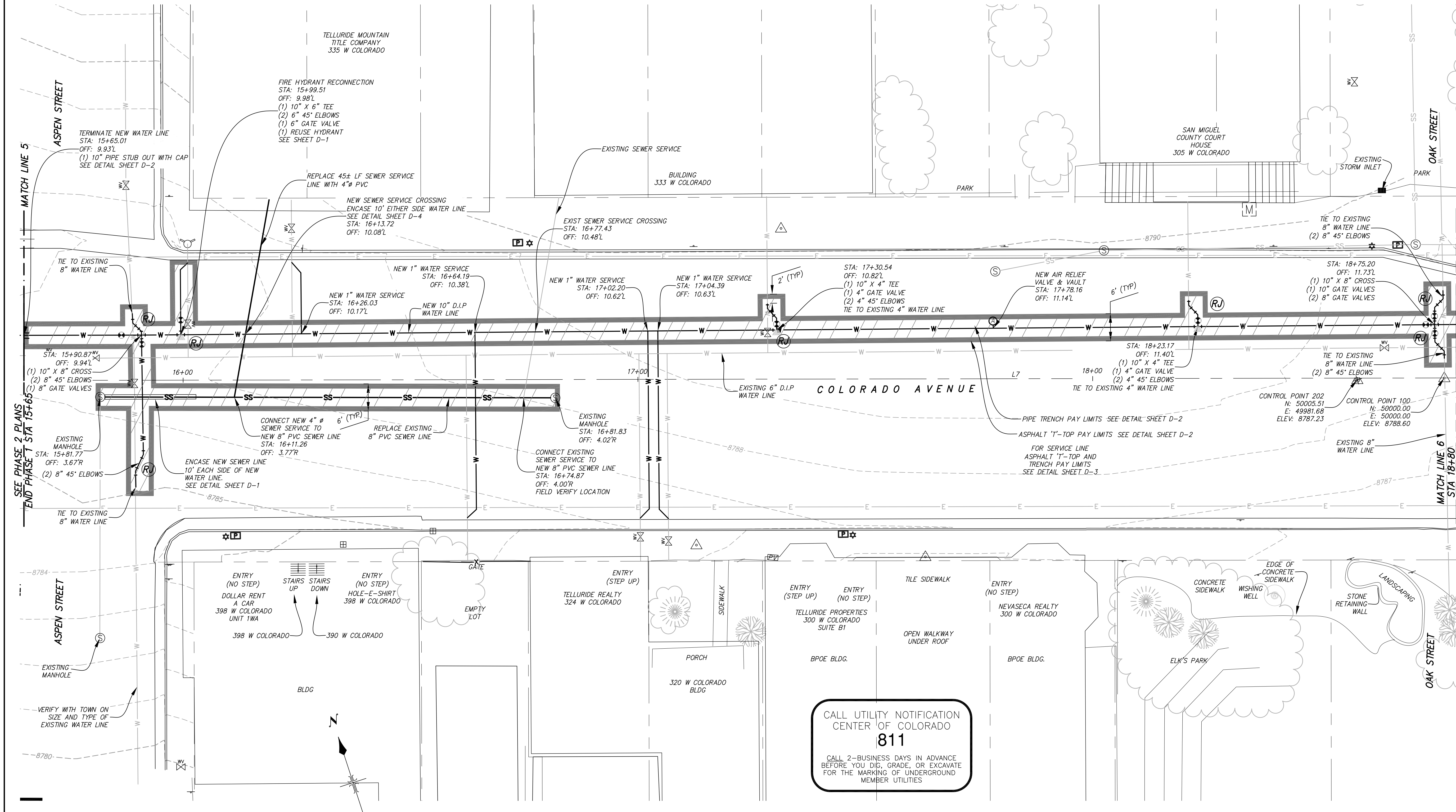
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DRAWING INDEX

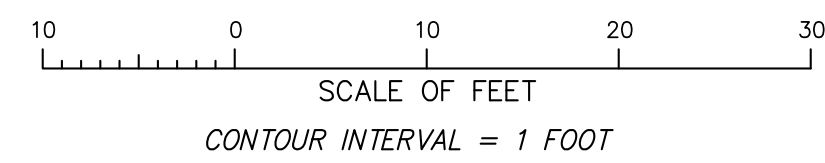
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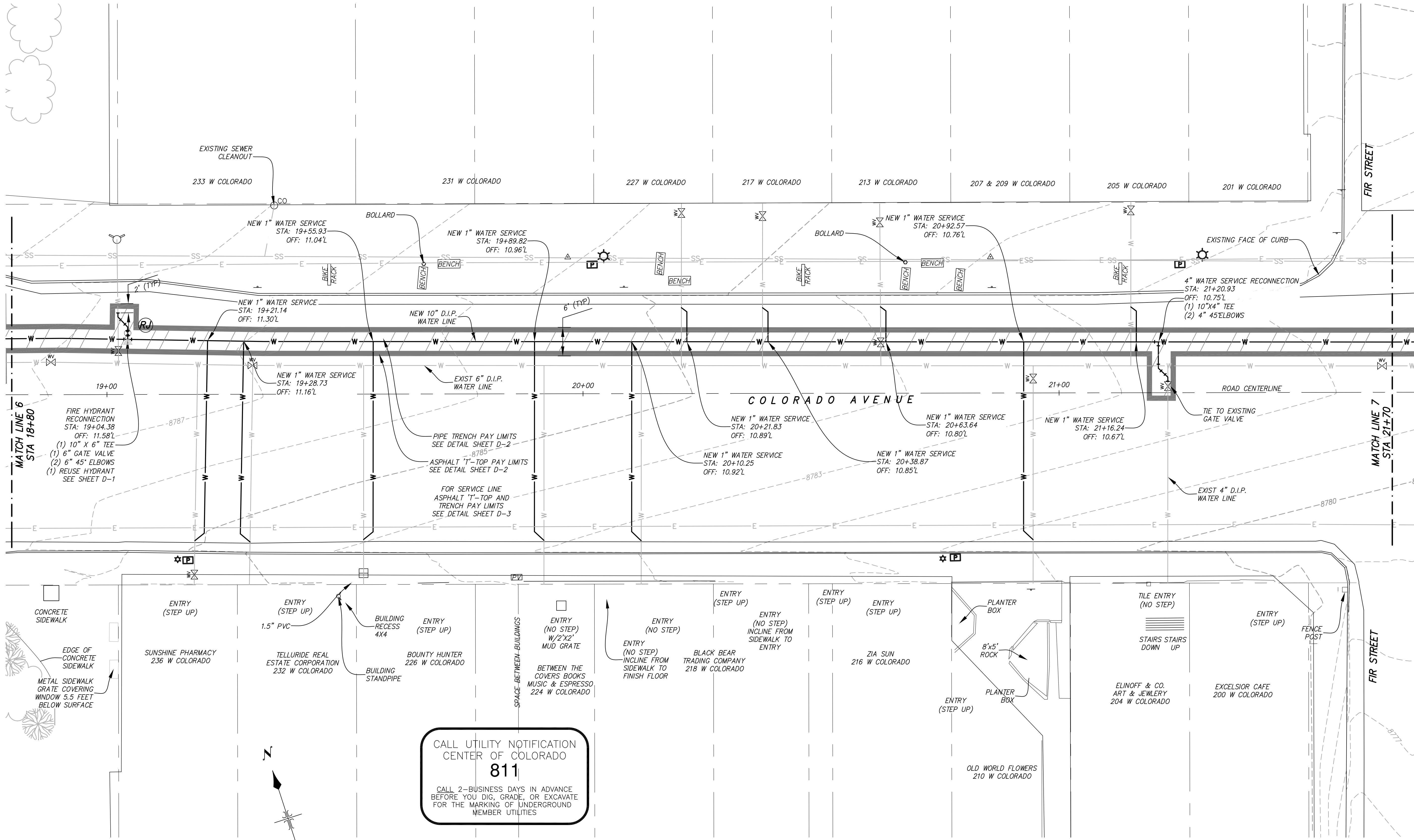


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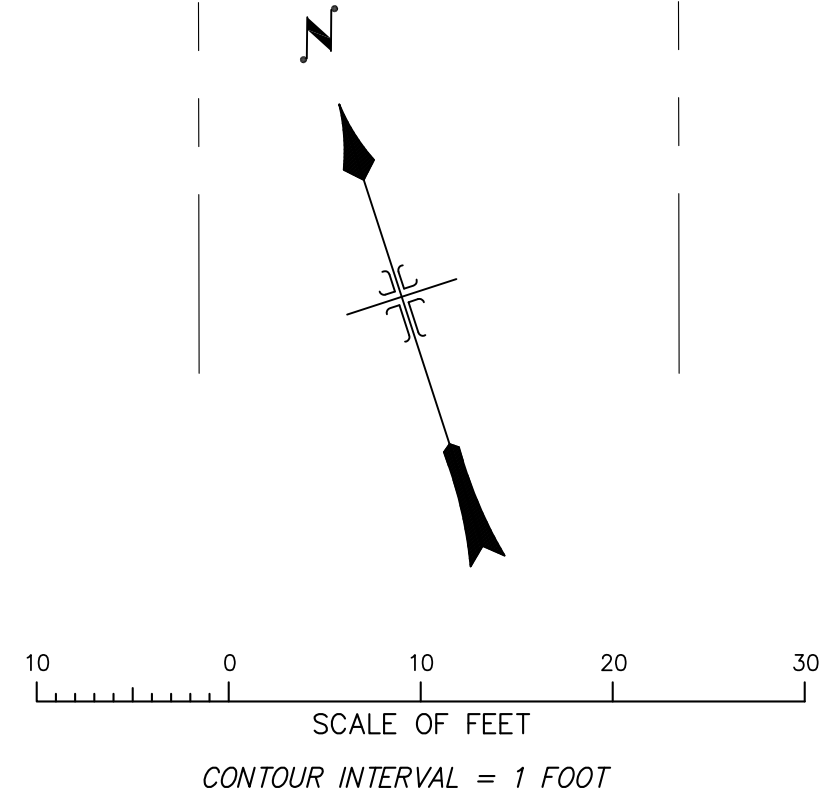
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COLORADO AVENUE WATER MAIN REPLACEMENT - PHASE 1
ASPEN STREET TO OAK STREET PLAN

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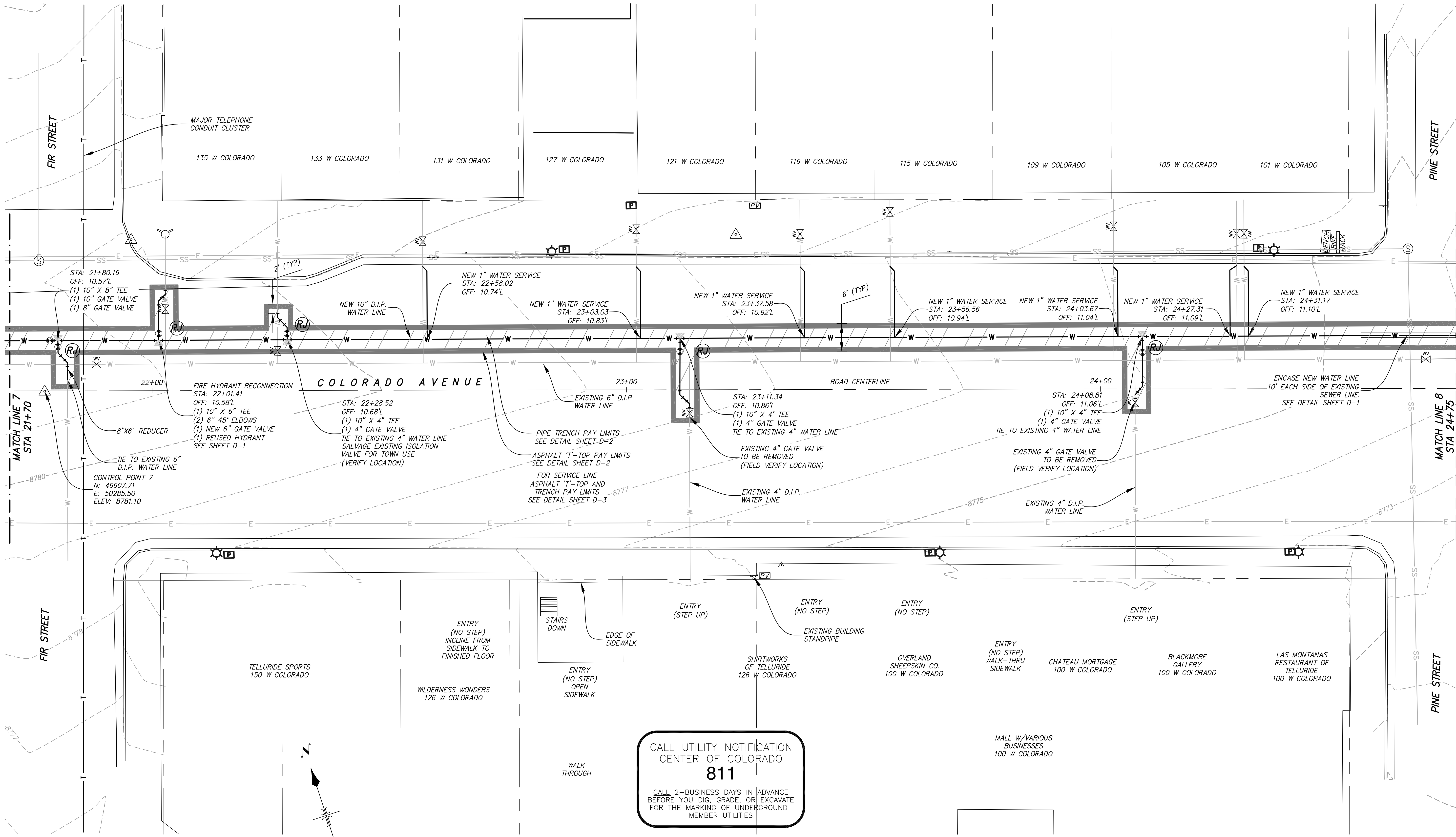
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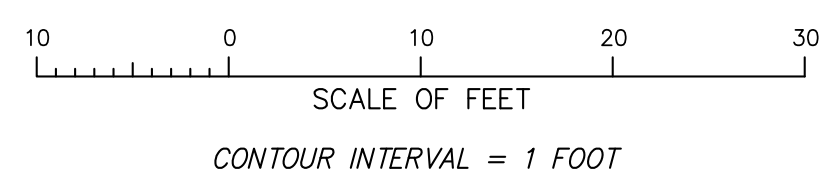
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COLORADO AVENUE WATER MAIN REPLACEMENT - PHASE 1
OAK STREET TO FIR STREET PLAN

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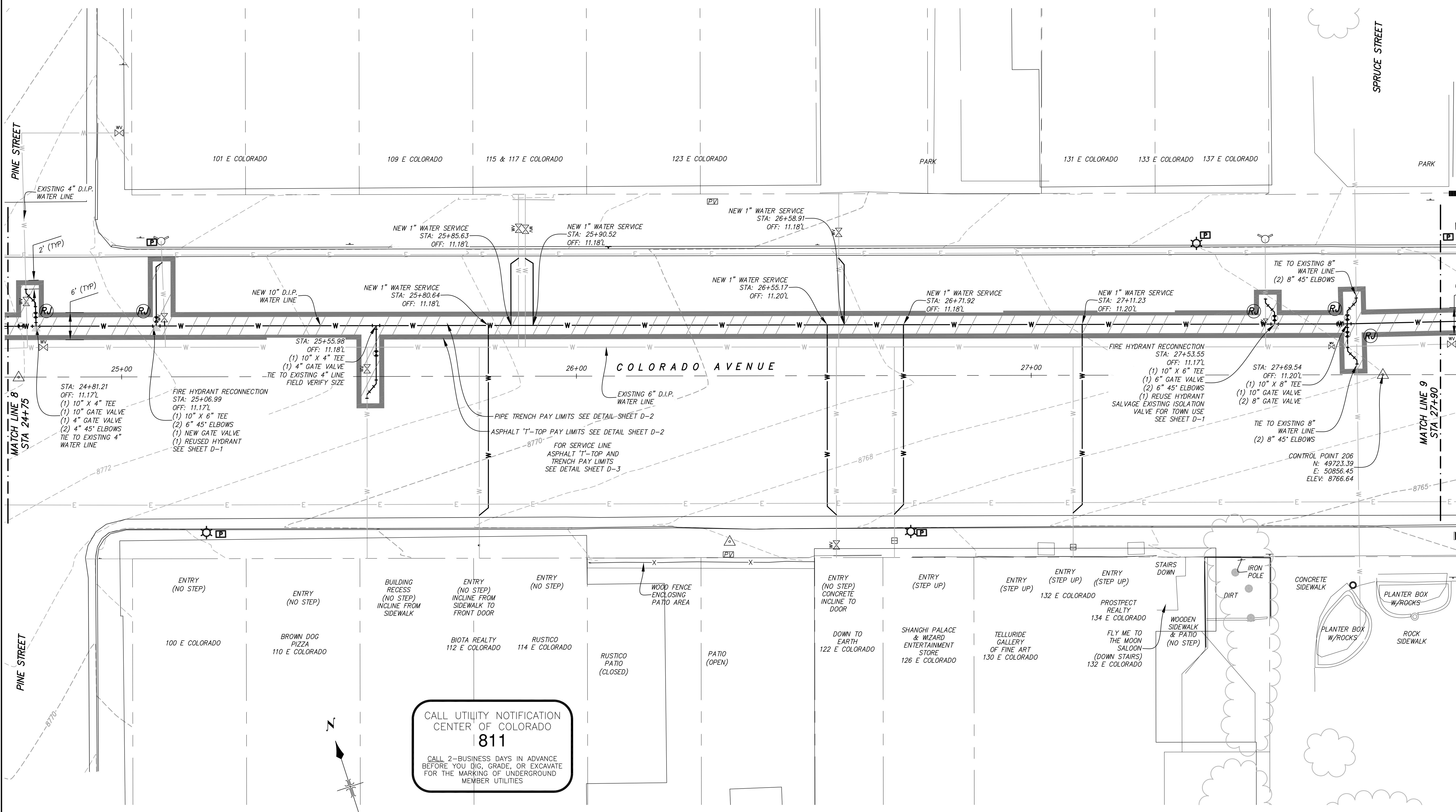


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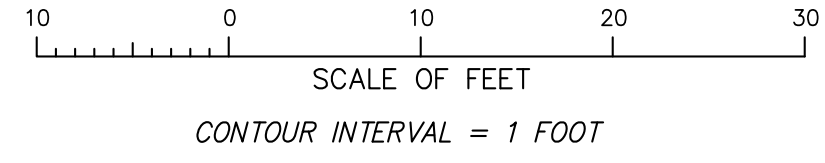
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COLORADO AVENUE WATER MAIN REPLACEMENT – PHASE 1
FIR STREET TO PINE STREET PLAN

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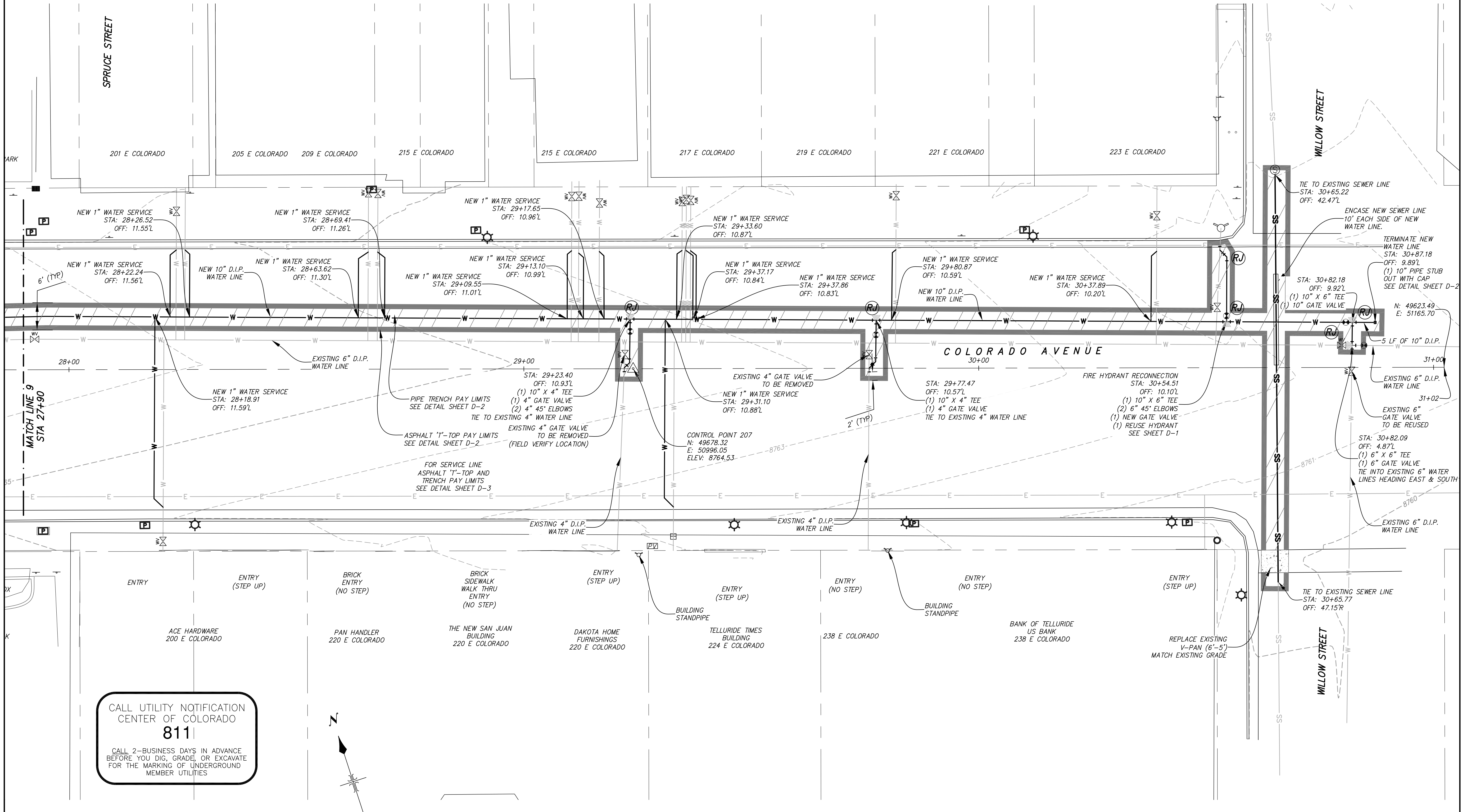
TOWN OF TELLURIDE

COLORADO AVENUE WATER MAIN REPLACEMENT – PHASE 1

PINE STREET TO SPRUCE STREET PLAN

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CONTOUR INTERVAL = 1 FOOT

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SPRUCE STREET TO WILLOW STREET PLAN

| REVISIONS | DATE |
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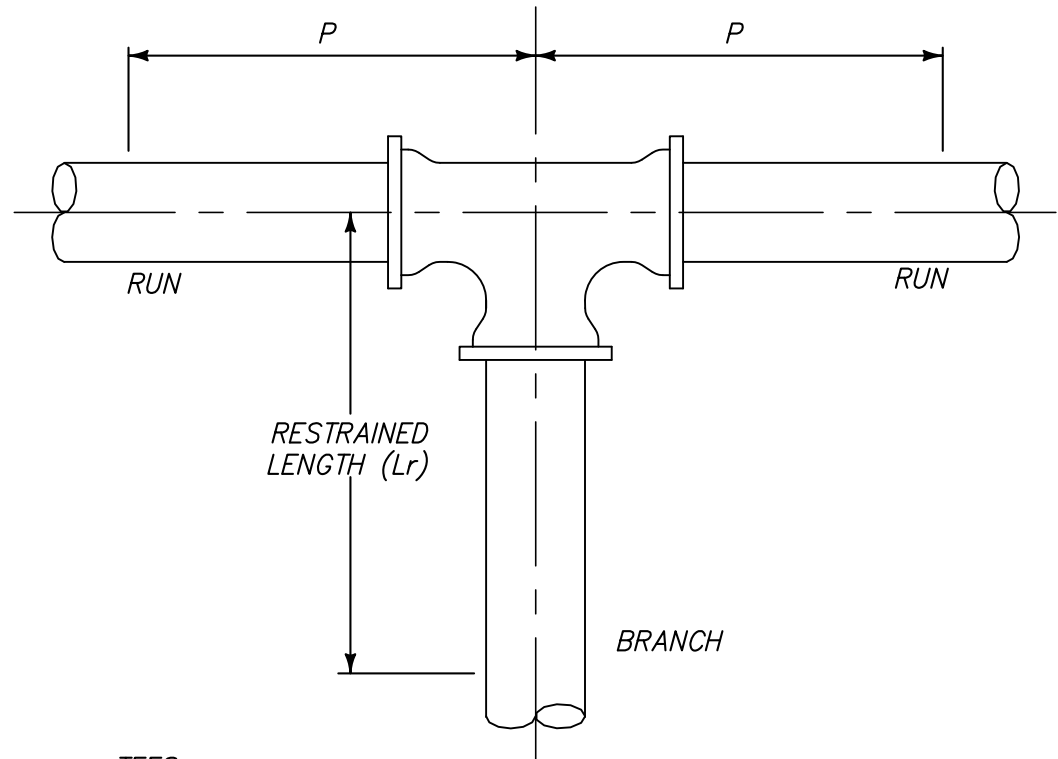
DESIGNED ELK, P.E.
DRAWN PJJ/BMB
DATE 12/5/08
PROJ. NO. 08-328
DRAWING NUMBER
C-5
OF <-> DWGS.

RESTRAINED JOINTS NOTES

1. THE LENGTHS OF RESTRAINED OR CONTINUOUS PIPE CALLED OUT IN THE FOLLOWING TABLES ARE FOR INSTALLATION OF MECHANICALLY RESTRAINED FITTINGS AND ARE CALCULATED BASED ON THE FOLLOWING PARAMETERS:

- A. PIPE MATERIAL IS DUCTILE IRON.
- B. THE SOIL TYPE IS "SP" AS DEFINED BY THE UNIFIED SOIL CLASSIFICATIONS, ASTM STANDARD D2487.
- C. THE TEST PRESSURE OF THE WATER SYSTEM IS TWO HUNDRED POUNDS PER SQUARE INCH (200PSI).
- D. THE TRENCH IS TYPE 5, AS PER ANSI/AWWA C150/A21.5, TRENCH CONDITIONS.
- E. THE DEPTH OF COVER IS SEVEN FEET (7').
- F. THE SAFETY FACTOR USED IS 2.0.
3. THE FOLLOWING RESTRAINT TABLES WILL BE USED UNLESS ALTERNATE TABLES ARE APPROVED BY THE ENGINEER OR SHOWN ON THE APPROVED PLANS.

ALL THRUST RESTRAINTS SHALL BE IN COMPLIANCE WITH SECTION 1406.



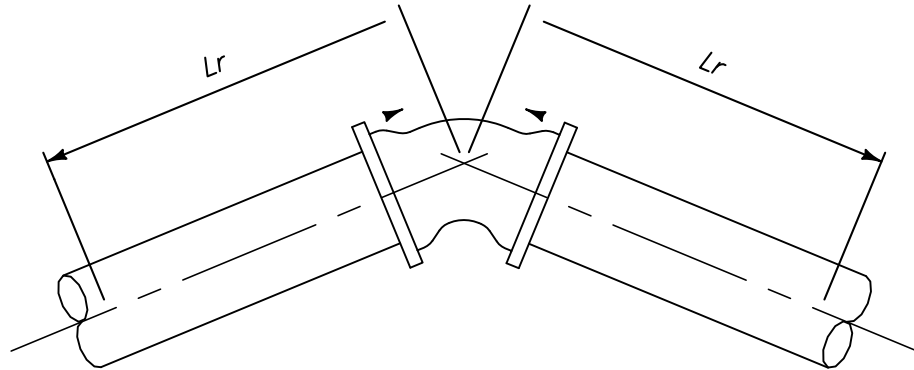
TEES
THE MINIMUM ATTACHED LENGTH OF PIPE (P) TO EXTEND IN EACH DIRECTION ALONG THE RUN OF THE TEE SHALL BE A SOLID PIPE WITHOUT JOINTS, FITTINGS, ETC. THE LENGTH OF THE RESTRAINED BRANCH SHALL BE DERIVED FROM THE FOLLOWING TABLE.

IF MULTIPLE FITTINGS OR VALVES ARE INVOLVED, THE LONGEST RESTRAINT LENGTH GOVERNS.

| TEE SIZE AND PIPE MATERIAL | MINIMUM ATTACHED LENGTH OF PIPE (P) | | | | | | | | | | |
|----------------------------|-------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | 0' | 2' | 4' | 6' | 8' | 10' | 12' | 14' | 16' | 18' | 20' |
| | LENGTH OF RESTRAINED BRANCH (Lr) | | | | | | | | | | |
| DUCTILE IRON PIPE | 4x4 | 23' | 12' | 2' | 1' | 1' | 1' | 1' | 1' | 1' | 1' |
| | 6x4 | 22' | 7' | 1' | 1' | 1' | 1' | 1' | 1' | 1' | 1' |
| | 6x6 | 32' | 21' | 11' | 1' | 1' | 1' | 1' | 1' | 1' | 1' |
| | 8x4 | 21' | 2' | 1' | 1' | 1' | 1' | 1' | 1' | 1' | 1' |
| | 8x6 | 31' | 18' | 4' | 1' | 1' | 1' | 1' | 1' | 1' | 1' |
| | 8x8 | 42' | 31' | 21' | 10' | 1' | 1' | 1' | 1' | 1' | 1' |
| | 10x4 | 21' | 1' | 1' | 1' | 1' | 1' | 1' | 1' | 1' | 1' |
| | 10x6 | 30' | 14' | 1' | 1' | 1' | 1' | 1' | 1' | 1' | 1' |
| | 10x8 | 41' | 28' | 15' | 2' | 1' | 1' | 1' | 1' | 1' | 1' |
| | 10x10 | 50' | 40' | 29' | 18' | 8' | 1' | 1' | 1' | 1' | 1' |

VERTICAL BENDS
IF VERTICAL BENDS ARE TO BE USED, ENGINEER SHALL BE CONTACTED FOR RESTRAINED JOINT LENGTHS.

IF MULTIPLE FITTINGS OR VALVES ARE INVOLVED, THE LONGEST RESTRAINT LENGTH GOVERNS.

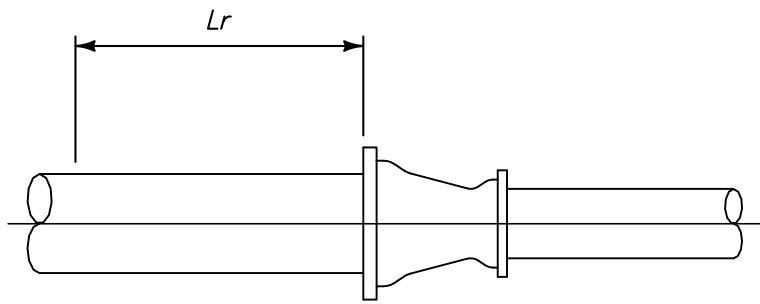


HORIZONTAL BENDS
THE MINIMUM RESTRAINED LENGTH OF PIPE (LR) TO EXTEND IN BOTH DIRECTIONS FROM THE HORIZONTAL BEND SHALL BE DERIVED FROM THE FOLLOWING TABLE.

IF MULTIPLE FITTINGS OR VALVES ARE INVOLVED, THE LONGEST RESTRAINT LENGTH GOVERNS.

| PIPE SIZE AND MATERIAL | HORIZONTAL BENDS | | | | |
|------------------------|------------------|---------|-----|-----|-----|
| | 11 1/4" | 22 1/2" | 45" | 90" | |
| D.I.P. | 4" | 1' | 2' | 4' | 10' |
| | 6" | 2' | 3' | 6' | 14' |
| | 8" | 2' | 4' | 8' | 18' |
| | 10" | 3' | 5' | 9' | 22' |

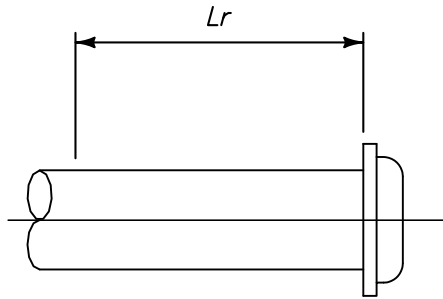
| REDUCER SIZE AND PIPE MATERIAL | MINIMUM RESTRAINED LENGTH |
|--------------------------------|---------------------------|
| 6x4 | 17' |
| 8x4 | 30' |
| 8x6 | 18' |
| 10x4 | 41' |
| 10x6 | 31' |
| 10x8 | 17' |



REDUCERS
THE MINIMUM LENGTH OF PIPE (LR) TO BE RESTRAINED ON THE LARGE SIDE OF THE REDUCER SHALL BE DERIVED FROM THE ABOVE TABLE.

IF MULTIPLE FITTINGS OR VALVES ARE INVOLVED, THE LONGEST RESTRAINT LENGTH GOVERNS.

| DEAD END SIZE AND PIPE MATERIAL | MINIMUM RESTRAINED LENGTH |
|---------------------------------|---------------------------|
| 4 | 23' |
| 6 | 32' |
| 8 | 42' |
| 10 | 50' |

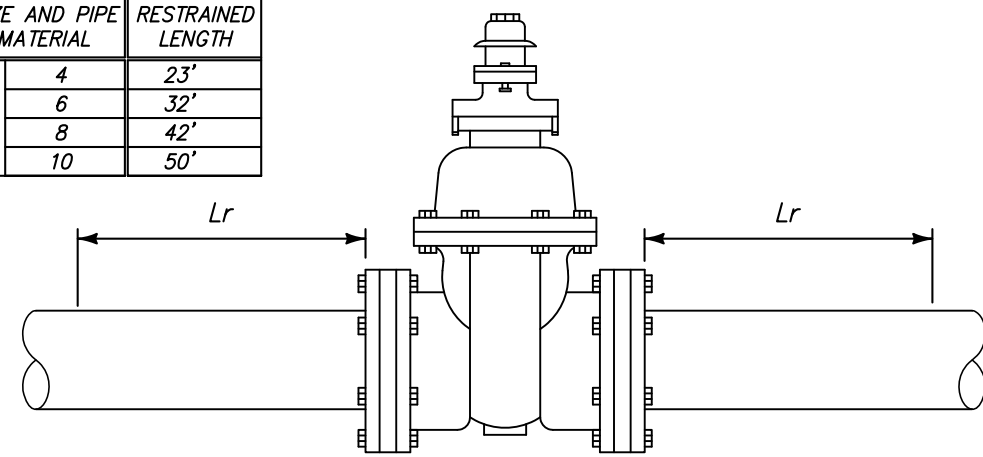


DEAD ENDS
THE MINIMUM LENGTH OF PIPE (LR) TO BE RESTRAINED ON A DEAD END SHALL BE DERIVED FROM THE ABOVE TABLE.

CONCRETE BLOCKS MAY BE USED WITH PERMISSION OF THE ENGINEER.

IF MULTIPLE FITTINGS OR VALVES ARE INVOLVED, THE LONGEST RESTRAINT LENGTH GOVERNS.

| VALVE SIZE AND PIPE MATERIAL | MINIMUM RESTRAINED LENGTH |
|------------------------------|---------------------------|
| 4 | 23' |
| 6 | 32' |
| 8 | 42' |
| 10 | 50' |



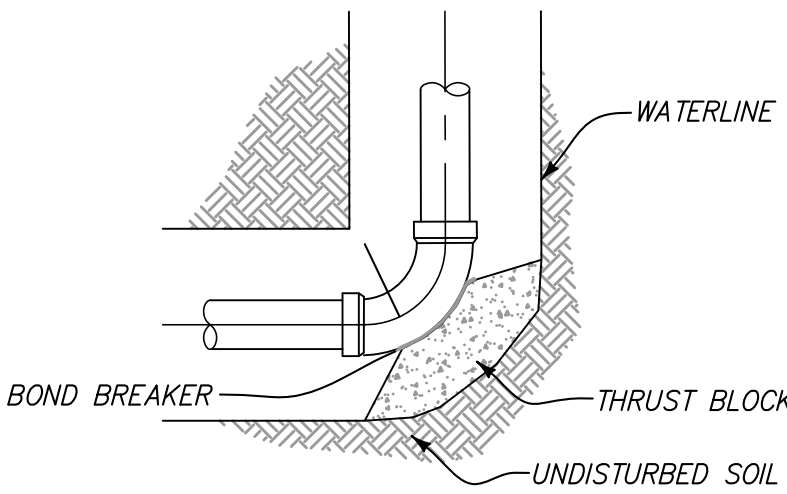
VALVES
THE MINIMUM LENGTH OF PIPE (LR) TO BE RESTRAINED ON A VALVE SHALL BE DERIVED FROM THE ABOVE TABLE.

IF MULTIPLE FITTINGS OR VALVES ARE INVOLVED, THE LONGEST RESTRAINT LENGTH GOVERNS.

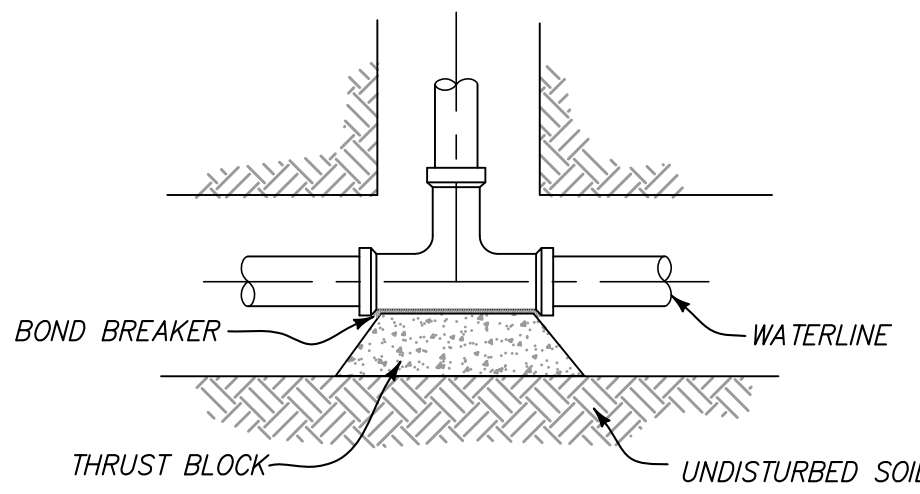
IN A SITUATION WHERE A VALVE IS PLACED IN A RELATIVELY LONG, STRAIGHT, AND UNOBSTRUCTED PIPELINE (200' EACH SIDE OF THE VALVE OR MORE) RESTRAINT IS NOT REQUIRED.

TYPICAL RESTRAINED JOINT (MEGA LUGGED) DETAIL ^{RU}

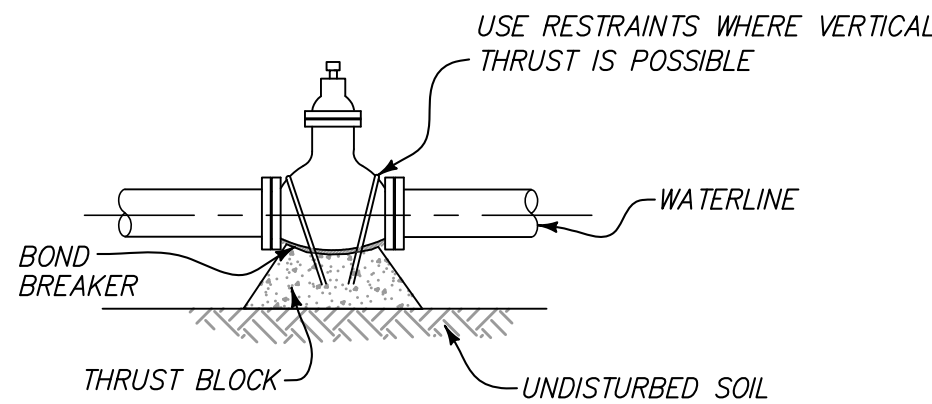
SEE PLAN FOR LOCATIONS OF RESTRAINED JOINT PIPING



90° BENDS



TEE OR PLUG OR DEAD END



VALVES

THRUST BEARING AREAS (SQ FT)

| PIPE SIZE | 4" | 6" | 8" | 12" |
|-------------------|--------|---------|---------|---------|
| PLUG/TEE/DEAD END | 2.4 | 5.0 | 8.6 | 18.3 |
| 90° BEND | 3.4 | 7.1 | 12.1 | 25.9 |
| VALVE BLOCK | 6 C.F. | 14 C.F. | 24 C.F. | 48 C.F. |

BASED ON SOIL BEARING PRESSURE OF 1500 PSF AND DESIGN PRESSURE 200 PSI (135 PSI + 65 PSI SURGE)

CONCRETE THRUST BLOCK NOTES:

ALL FITTINGS SHALL BE RESTRAINED PER DETAIL RJ, HEREON.

ALL DEAD ENDS, PLUGS, TEES, VALVES AND 90° BENDS SHALL ALSO HAVE CONCRETE THRUST BLOCKS PER THIS DETAIL.

DEAD END NOTES:

DEAD ENDS SHALL CONSIST OF STAR PIPE PRODUCTS COMPACT MJ PLUG OR CAP OR APPROVED EQUAL

AT DEAD ENDS, WRAP FITTINGS WITH TAR PAPER, FELT OR HEAVY KRAFT PAPER TO PROVIDE BOND BREAK BETWEEN CONCRETE AND FITTINGS FOR FUTURE EXTENSION

TYPICAL CONCRETE THRUST BLOCK DETAILS

PRELIMINARY
FOR BID PURPOSES ONLY

CALL UTILITY NOTIFICATION
CENTER OF COLORADO
811

CALL 2-BUSINESS DAYS IN ADVANCE
BEFORE YOU DIG, GRADE, OR EXCAVATE
FOR THE MARKING OF UNDERGROUND
MEMBER UTILITIES

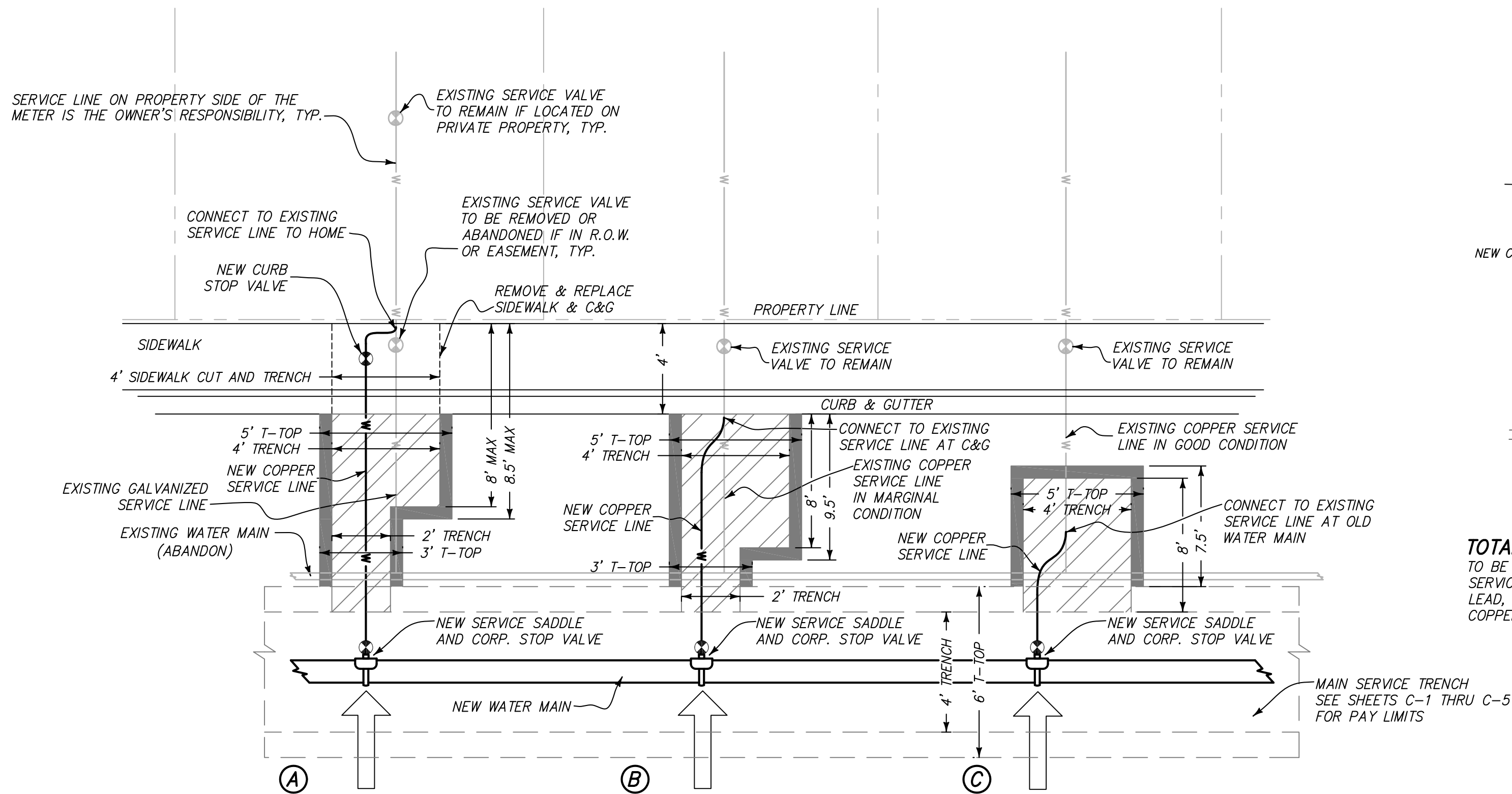
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Civil, Structural & Geotechnical Engineers
222 So. Park Ave. Montrose, Colorado 81401
970-249-6828 Fax. No. 970-249-0945
www.buckhorngeo.com

TOWN OF TELLURIDE
COLORADO AVENUE WATER MAIN REPLACEMENT
JOINT RESTRAINT AND THRUST BLOCK DETAILS

| REVISIONS | DATE |
|-----------|------|
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|----------------|------------|
| DESIGNED | ELK, P.E. |
| DRAWN | PJJ/BMB |
| DATE | 12/5/08 |
| PROJ. NO. | 08-328 |
| DRAWING NUMBER | D-2 |
| OF | <-> DWGS. |



TOTAL REPLACEMENT (25%)
TO BE PERFORMED IF EXISTING SERVICE LINE IS GALVANIZED STEEL, LEAD, OR OTHER MATERIAL THAN COPPER.

INCLUDES:
SERVICE SADDLE
CORPORATION STOP VALVE
1" COPPER TUBING (10')
CURB STOP VALVE
ADAPTER FITTINGS CONNECT EXIST.
TRACER WIRE & WARNING TAPE
C&G AND SIDEWALK CONCRETE REPLACEMENT

ROAD REPLACEMENT (25%)
TO BE PERFORMED IF EXISTING SERVICE LINE IS COPPER AND IN MARGINAL CONDITION. OWNER OR ENGINEER TO ASSESS.

INCLUDES:
SERVICE SADDLE
CORPORATION STOP VALVE
1" COPPER TUBING (10')
ADAPTER FITTINGS CONNECT EXIST.
TRACER WIRE & WARNING TAPE

TIE-IN (50%)
TO BE PERFORMED IF EXISTING SERVICE LINE IS COPPER AND IN GOOD CONDITION

INCLUDES:
SERVICE SADDLE
CORPORATION STOP VALVE
1" COPPER TUBING (10')
ADAPTER FITTINGS CONNECT EXIST.
TRACER WIRE & WARNING TAPE

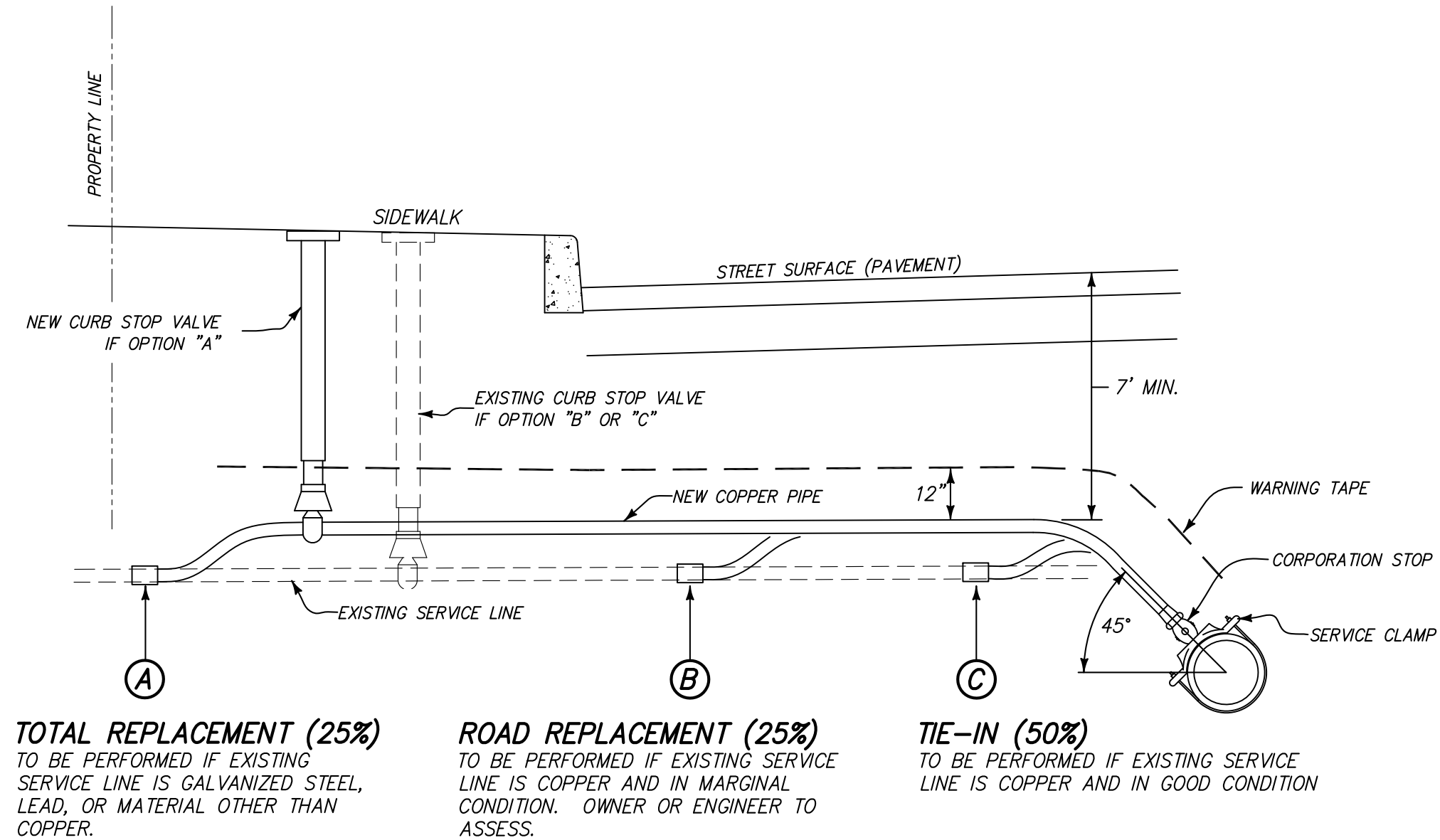
TYPICAL SERVICE CONNECTION CONDITIONS

NO SCALE

NOTES

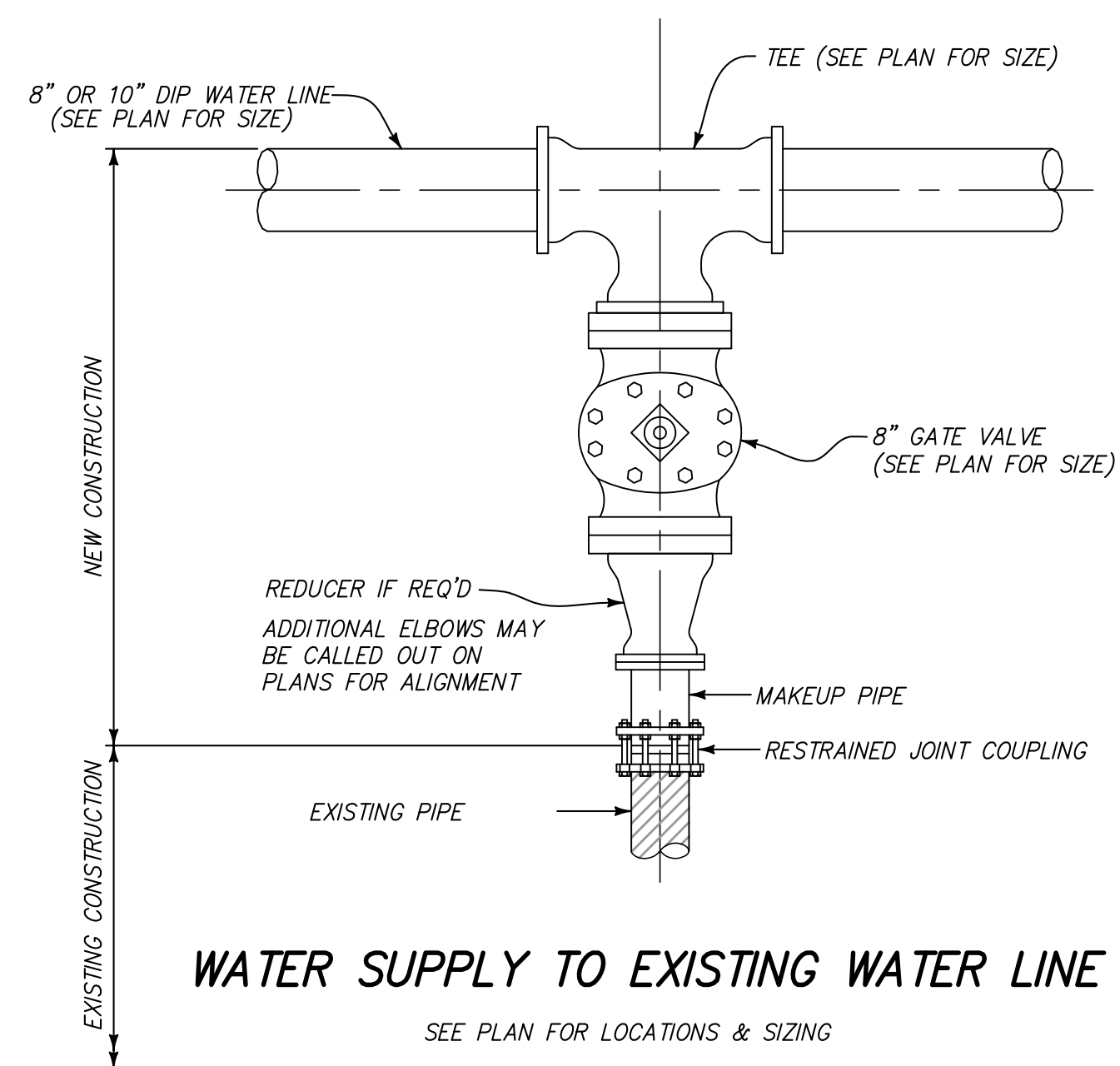
All drilling or tapping of any water mains, new or existing, shall be done only with equipment provided with active purging facilities as required by this specification.

- No "dry" drilling or tapping of watermains shall be permitted. Prior to any drilling, the main to be drilled shall have all entrapped air removed and water pressurized to 40 p.s.i. or normal operating system pressure, whichever is higher.
- Drills and shell cutters shall be maintained sharp and of proper dimensions to minimize damage to the pipe and to preserve the integrity of the remainder of the pipe wall. Drills and shell cutters shall produce clean, even entry cuts under normal drilling machine stresses or they shall be replaced as directed by the Engineer. Coupons shall be removed by the approved tapping method.
- All pipe bedding and thrust blocking shall be in place and approved by the Engineer prior to the start of drilling. Thrust and valve support blocking shall be in place for any tapping sleeve and valve and approved by the Engineer prior to the start of drilling.



WATER SERVICE CONNECTION

SEE PLAN FOR LOCATION
NOT TO SCALE



WATER SUPPLY TO EXISTING WATER LINE

SEE PLAN FOR LOCATIONS & SIZING

PRELIMINARY
FOR BID PURPOSES ONLY

CALL UTILITY NOTIFICATION
CENTER OF COLORADO
811

CALL 2-BUSINESS DAYS IN ADVANCE
BEFORE YOU DIG, GRADE, OR EXCAVATE
FOR THE MARKING OF UNDERGROUND
MEMBER UTILITIES

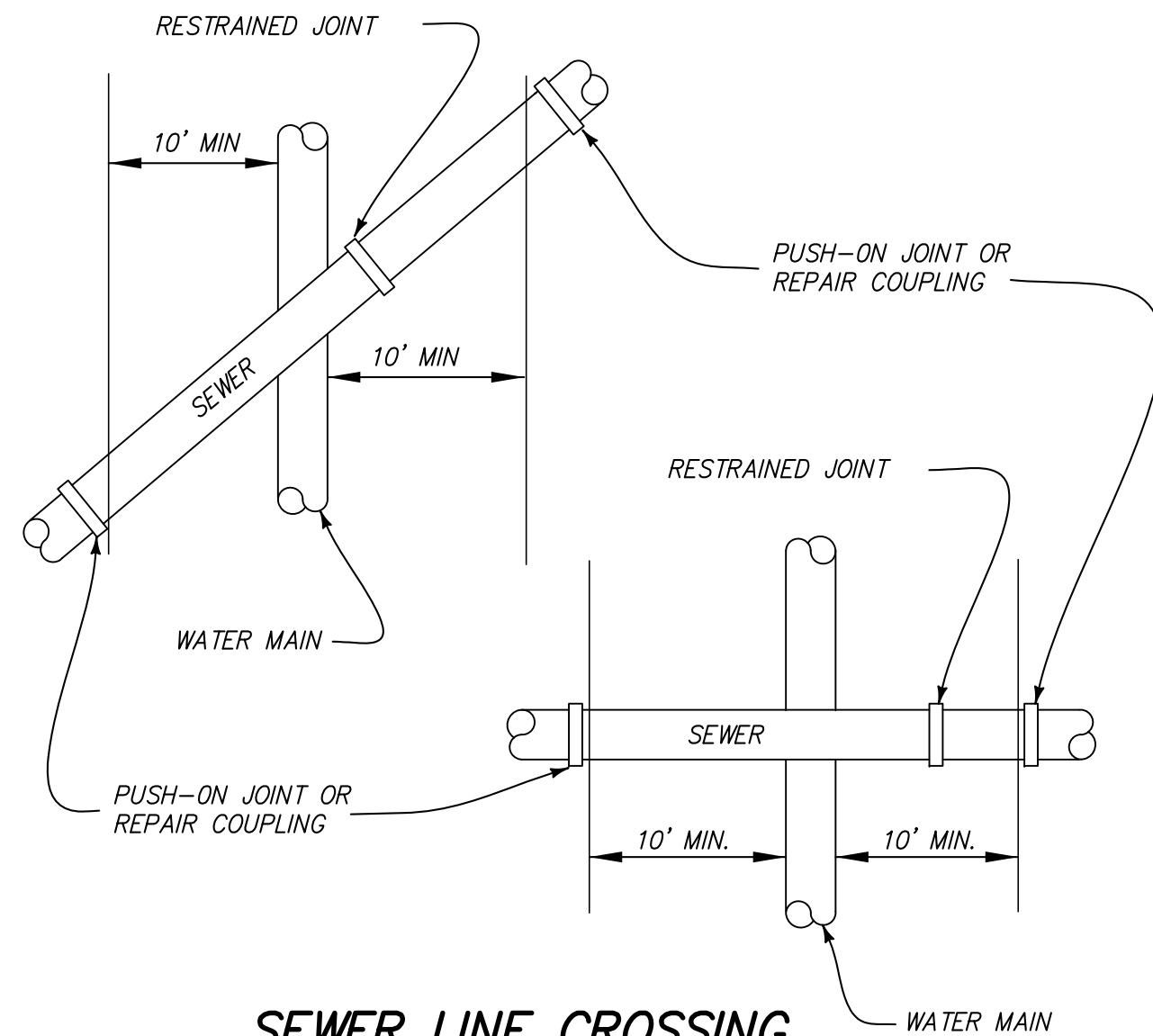
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Civil, Structural & Geotechnical Engineers
222 So. Park Ave. Montrose, Colorado 81401
970-249-6828 Fax. No. 970-249-0945
www.buckhorngeo.com

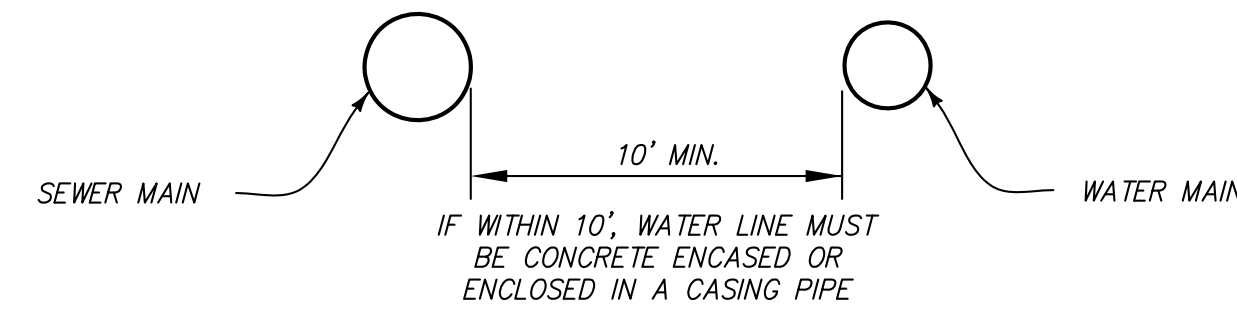
TOWN OF TELLURIDE
COLORADO AVENUE WATER MAIN REPLACEMENT
TYPICAL WATER CONNECTION DETAILS

| REVISIONS | DATE |
|-----------|------|
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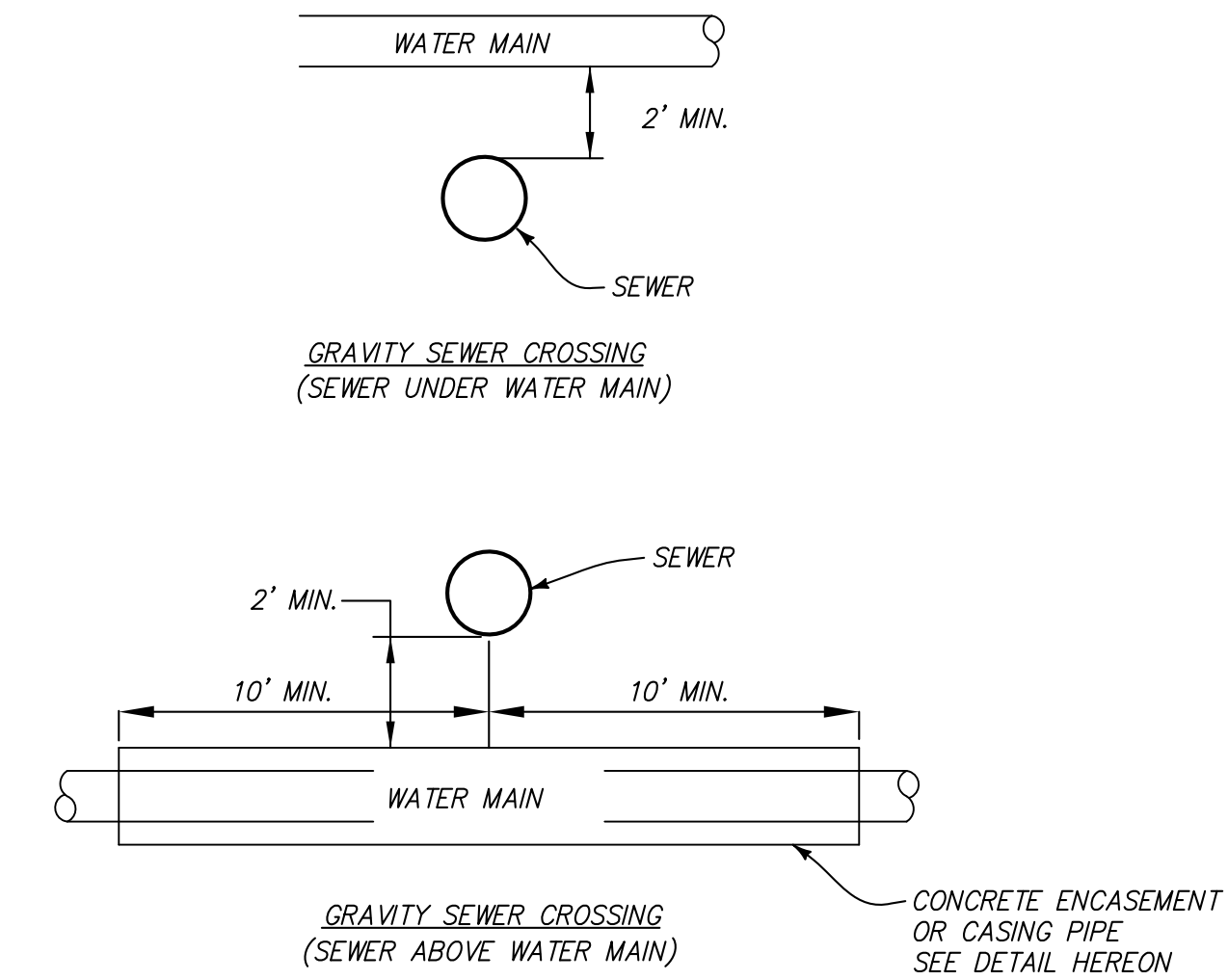
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|----------------|------------|
| DESIGNED | ELK, P.E. |
| DRAWN | PJL/BMB |
| DATE | 12/5/08 |
| PROJ. NO. | 08-328 |
| DRAWING NUMBER | D-3 |
| OF | <-> DWGS. |



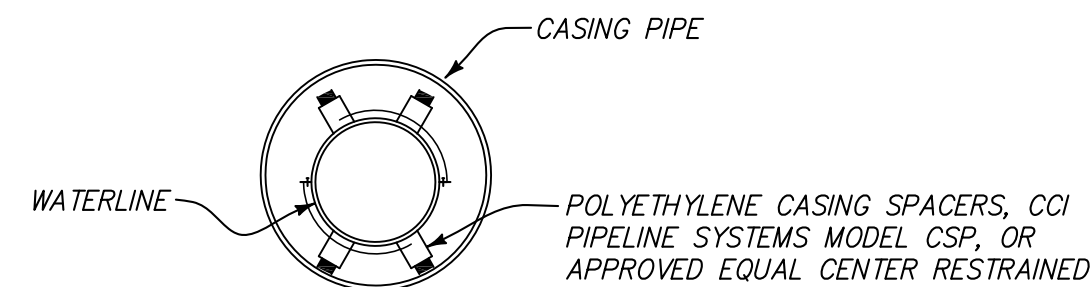
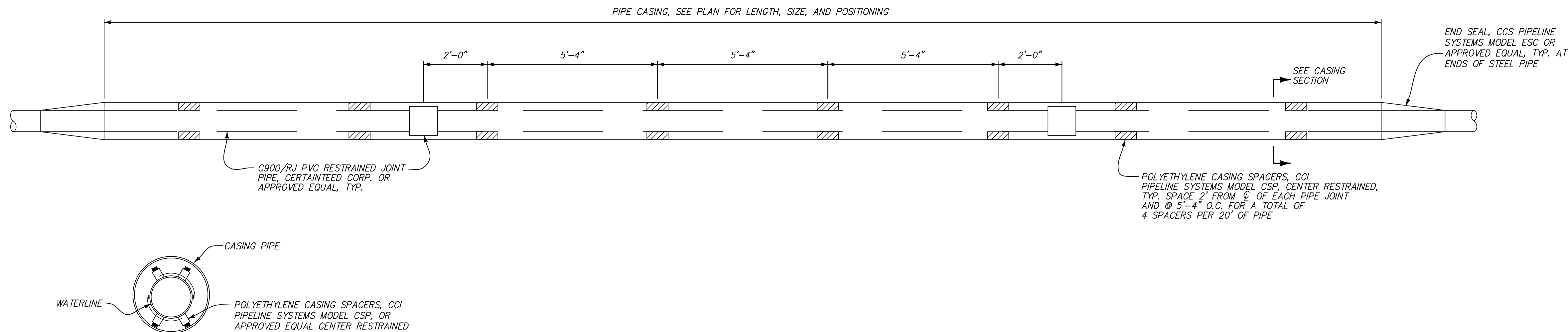
SEWER LINE CROSSING
PLAN VIEWS



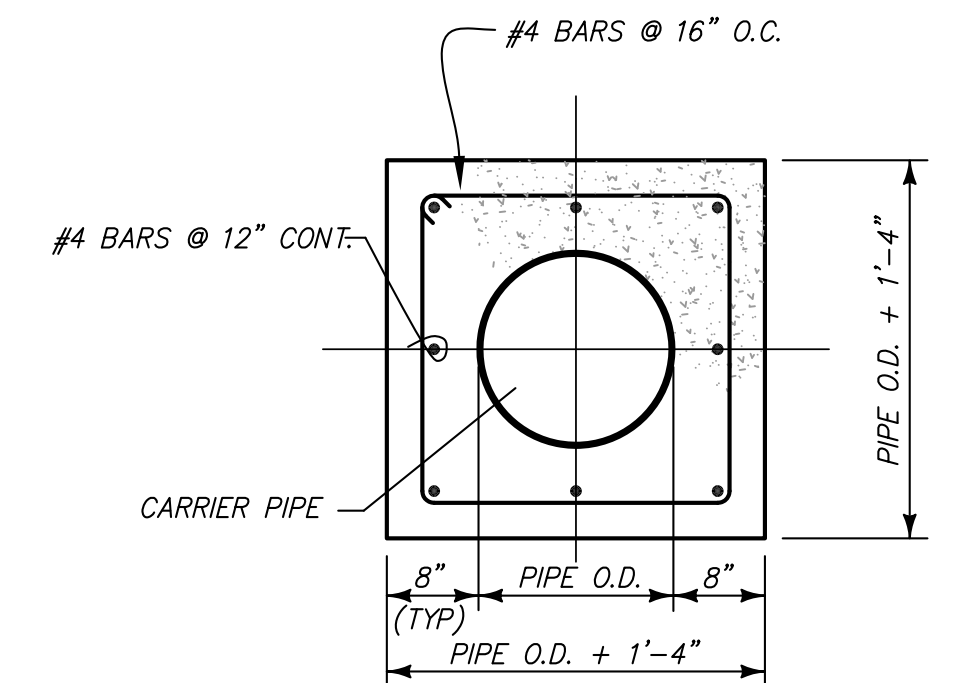
SEWER LINE CROSSING
HORIZONTAL SEPARATION



SEWER LINE CROSSING
VERTICAL SEPARATION



CASING SECTION



CONCRETE ENCASEMENT DETAIL
NOT TO SCALE

TYPICAL CASING SPACERS AND END SEALS DETAIL

SEE PLAN FOR PAY LIMITS OF CROSSINGS
AND LIMITS OF RESTRAINED JOINT PIPING

PRELIMINARY
FOR BID PURPOSES ONLY

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CENTER OF COLORADO
811

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TOWN OF TELLURIDE
COLORADO AVENUE WATER MAIN REPLACEMENT
WATER AND SEWER CROSSING DETAILS

| REVISIONS | DATE |
|-----------|------|
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|----------------|------------|
| DESIGNED | ELK, P.E. |
| DRAWN | PJJ/BMB |
| DATE | 12/5/08 |
| PROJ. NO. | 08-328 |
| DRAWING NUMBER | D-4 |
| OF | <-> DWGS. |